EDDE. PROBLEM SET 7

Solve the following systems of differential equations:

a)
$$\begin{cases} y_1'(x) &= & y_2(x) & + & x \\ y_2'(x) &= & -y_1(x) & - & x \end{cases}$$

b)
$$\begin{cases} y_1'(x) &= & y_2(x) & + & x \\ y_2'(x) &= & y_1(x) & - & x \end{cases}$$

c)
$$\begin{cases} y_1'(x) &= & y_2(x) & + & e^x \\ y_2'(x) &= & y_1(x) & - & e^x \end{cases}$$

d)
$$\begin{cases} y_1'(x) &= & y_1(x) & + & 2y_2(x) \\ y_2'(x) &= & y_1(x) \end{cases}$$

e)
$$\begin{cases} y_1'(x) &= & y_1(x) & + & 2y_2(x) & + & e^x \\ y_2'(x) &= & y_1(x) & & & - & e^x \end{cases}$$

f)
$$\begin{cases} y_1'(x) &= & y_1(x) & + & 2y_2(x) & + & e^{-x} \\ y_2'(x) &= & y_1(x) \end{cases}$$

g)
$$\begin{cases} y_1'(x) &= & 2y_1(x) & + & y_2(x) \\ y_2'(x) &= & -8y_1(x) & - & 2y_2(x) \end{cases}$$

h)
$$\begin{cases} y_1'(x) &= & 2y_1(x) & + & y_2(x) & + & \sin 3x \\ y_2'(x) &= & -8y_1(x) & - & 2y_2(x) \end{cases}$$